COOP'S TECHNOLOGY DIGEST

-A Timely Report on The World of Communications-

Published as a confidential industry newsletter ten times each year by electronics and technology author Robert B. Cooper. Reports here are source checked for accuracy prior to publication; readers are cautioned to conduct their own verification of data prior to formulating business judgements based upon reports here. Data of unverified authenticity may be so-labelled as a guide to reader caution. The publisher draws upon 42 years of leading edge electronic industry media experience but can be misled by those with clever agendas. Entire content Copyright 2002 by Robert B. Cooper. When lifting material, please be courteous enough to credit source (i.e., "*as reported in Coop's Technology Digest for* ... "). CTD accepts no source payment for publication of information here. **Making "extra copies" for staff use without our written permission is a violation of our copyright**, whether the entire publication or portions. Reasonable "Replication Rights" are available to those who find the need to "share" contents with non-subscribers. Query to Gay Cooper at 64-9-406-0651. Our objective? "*To keep the bastards honest.*"

June 07, 2002 - ISSUE 02-06-89

-IN THIS ISSUE-

Politics and rural broad band -p. 2; Who will pay for rural broad band? -p. 3; BCL's roll in rural broad band? -p. 4; 2.4 GHz 802.11b standard -p. 5; Personal: SDStv.com Limited and New Zealand -p. 5; Satellite fed ISP connection - what it costs -p. 8; Optus versus NSS - the hype war -p. 8; USA and Australia join rural broad band hunt -p. 9; Why rural farmers desire broad band -p. 10; Murdoch/NDS piracy case: Update -p. 10; iTV Digital - post mortem -p. 14; EBU optimism - DTT "not dead" - p. 16; Fall out: Canada's gray/grey market satellite challenge -p. 16; Swapping movies on Internet - e-piracy - p. 20; Copyright anchor dragging DTT's chain -p. 20; Sky NZ heads for profits - by raising customer rates -p. 21; NZ web site discloses Sky NZ terrestrial TV analogue piracy -p. 22; Australia rethinks wisdom of DTT rules - p. 23; High-tech answer to kidnapping threat -p. 24; Indian cable TV stealing World Cup -p. 24; Austar rushes through an additional A$43.5 million -p. 24; Pentagon plans to turn-up GPS transmission power -p. 25; Fiji complains about Australian media intrusion into Pacific -p. 26

Publication note: August 2002, our 91st issue, will be our last for this publication. Renewals at this time are adjusted to reflect issues to that date and not beyond. No new subscriptions are being accepted. Our SatFACTS Monthly plans no such exodus.

REACHING CTD: Telephone (64) (0)9-406-0651; 24 hour fax (64) (0)9-406-1083.
e-mail Skyking@clear.net.nz. Web site: http://www.apsattv.com (SatFACTS sub-file)
Next scheduled issue: July 05, 2002

COOP'S TECHNOLOGY DIGEST / SUBSCRIPTION INFORMATION

There are ten (10) issues per year on a schedule dictated by industry events. The readership includes telecommunication industry consultants, state and privately owned broadcasters/telecasters, brown goods importers, retail stockists, installation and maintenance firm personnel, manufacturers, educators, regulatory agency personnel, business investors and Sir Arthur C. Clarke. All copies sent via airmail / Fast Post, world-wide. Annual subscription fee is as follows: Within New Zealand - $250; within Australia, through AV-COMM Pty Ltd., PO Box 225, Brookvale, NSW 2100 (tel [61]-2-9939-4377 or fax [61]-2-9939-4376). Outside of Australia and New Zealand, US$250 per year. Outside of Australia, please make out subscription payment and mail to:

Robert B. Cooper, PO Box 330, Mangonui, Far North, New Zealand

Now - Our Ninth Year of Service to the Pacific

COOP'S
TECHNOLOGY DIGEST

June 7, 2002 - VOLUME 02-06-89

Politics, as usual?

CTD for February (#85) reported on a proposal to deliver 64 kbps and faster Internet connections to rural locations in Northland (NZ) using a new BCL provided digital microwave network combined with 3 to 3.5 GHz (gigahertz) microwave "transceivers" (transmitter plus receiver). The Far Northern region of NZ was one of several early this year hoping to attract regional and national funding to build two-way data and telephone systems which would leapfrog over the existing low capacity Telecom (NZ) copper wire networks now serving such regions. The (existing) fifty - seventy year old copper wire systems simply lack the finesse required to provide these sparsely populated, non-metropolitan, regions with the quality of Internet connection required in an increasingly data oriented world.

Instrumental in the Far North initiative has been Cable Bay political activist Chris Matthews, known for his labour party support. Matthews, as CTD reported in February, has for years endeavoured to raise the telecommunications issue from a secondary interest to a primary effort within Labour party hierarchy. And BCL, the technology arm of Television New Zealand (TVNZ), came to the Matthews party after invitations to Telecom and Clear were turned away.

The concept is this. Replacing existing antiquated copper lines and support equipment with current fibre optic lines is cost prohibitive; the revenue to be generated by users would never return a profit to Telecom (or Clear). In fact, the capital cost of the upgrade would act as a break on Telecom profits generated in more populated regions. Telecom has announced their interest in "selling off" rural plants, all (essentially) copper wire and installed in an era when the New Zealand Government, through the post office operation of the telephone utility, had an entirely different view - provide the basic telephone service without respect to what it cost to stretch lines to rural households. As recently as the early 1990s, any home could be connected to the telephone system for a token charge of $100 although the installation might cost 100 times as much to create.

There are no answers to this commercial challenge. Installing newer high capacity (fibre optic) lines cost big bucks, and short of a heavy services user at the end of such an extension, Telecom has no commercial answers short of various radio linking schemes. Even here radio links are only marginally less costly to install than fibre optic lines although typically radio tends to be far quicker to implement.

A radio link begins at the nearest location where full telephone exchange service is available and terminates at the customer premise. In between - 1, 10 up to 100km of airspace. The termination point may be a single telephone or PC, or it can also be a mini-exchange into which some number of separate, individual, users are connected.

Enter the New Zealand Government with a self proclaimed "mandate" to "improve telecommunications service to rural users." A number of politically potent groups are involved including ranchers, dairy farmers and others who have a particular need for current market pricing and other "Internet available" data. With an election looming, the present Government is anxious to be seen as responding with a scheme to "fix" this problem. If dairy farmers, for example, believe Government is taking steps to improve their "IT" connections, there is the likelihood that as a commercial body their votes will swing behind Government in the coming election. To this point, it is "politics, as usual."

Dairy farmers and similar commercial categories are not alone in seeking a technology solution to a very real problem. Equally interested is BCL (Broadcast Communications Limited), the technology division of TVNZ, a number of would be competitors to BCL or support groups hoping to cash in on an explosion in new rural IT system hardware sales, and, the citizenry living in rural areas.

The story unfolds in the following sequence; first the "pre-game hype."

"**NZ Govt to outline broad band**. The Government will give details of its "multi-million" dollar regional broad band initiative announced in the budget to more than 100 representatives of telecommunications carriers and equipment suppliers, regional authorities, and other interested parties in Wellington. Details of the tender process and time-frames for the 15 to 20 regional broad band projects will be outlined by Deputy Prime Minister Jim Anderton and Commerce Minister Paul Swain. The company managing the project will be announced. The tender process is eagerly awaited by the telecommunications vendor community. It is expected that all the major telecommunications companies in New Zealand will be pitching for business. The Government is making access to broad band a key plank of its regional development strategy for the country."

Then the actual plan, as revealed to an anxious IT community:

"**Rural Net tenders spelt out**. Commerce Minister Paul Swain told the country's major telcos that if they wanted a slice of the regional high-speed Net tenders the government is about to let, they must form relationships with local community groups in the regions targeted. He spelt out the tender process for regional broad band tenders at a packed meeting of telecommunications companies and community groups in Wellington, addressed also by Deputy Prime Minister Jim Anderton.

"Mr Swain says that vendor consortiums may have to be formed to meet the requirements of the tenders, and is adamant that successful bids will involve partnerships with local communities. 'That is absolutely fundamental and critical to this issue,' he says. The government expects to meet its target of high-speed Internet supporting regional broad band to majority of regional users by the end of 2003 with virtually all the rest getting services by November 2004. Mr Swain says there will be between 10 and 20 regional tenders to potential providers.

"The 'tens of millions of dollars', which speculation points to being $30-$40 million, announced on budget day for regional broad band, will involve tenders for regional groupings of schools, and would aim to give them broad band speeds of around 512 kilobits per second. The cost would be met by the Economic Development Ministry and the Education Ministry and would be sufficient to fund services likely to extend to between 75 and 85 per cent of rural communities. The first tender will be a request for information which will place a high priority on the bidder's plans to reach out beyond schools to business, government, and individual customers in each region. Mr Swain says the government is aiming for 'whole-of-community' delivery and the winners in a tendering process that will involve requests for proposals, probably in August or September, would be likely to provide coverage that would bring broad band to all but about 10 per cent of the country. To cover the remaining 10 per cent, local communities, through trusts and other vehicles, would have to come up with funding, he says. Consultancy Amos Aked Swift has been appointed project manager for the initiative."

Political party competitor National voiced its support and concerns after the announcements:

"**Attention to broad band gets welcome nod**. Maurice Williamson, National party spokesman on tertiary education, IT, and research, science and technology, says the budget rhetoric is a step in the right direction. "The problem is the detail and time frame." He says it's great to see the Government giving attention to broad band for education and business in provinces and regions. But the money being put up is trivial, says Mr Williamson, when what has to be done is considered. "I'd like to know the number that is going to be put into this." How tendering and contracts will be managed is another matter, he says. He thinks there is bound to be litigation and the whole process must be very open. Governments in the knowledge economy age have to be a catalyst to get things up and moving, he says, but must step away once things are running.

"Mr Williamson supports the money being put into research, science and technology, and education. But he says it needs to be up front rather than over a long time which diminishes the effects. In real terms the increase in education funding is not that big considering the size of the budget surplus, he says. Student numbers are increasing and he says that is not really taken into account by the budget. 'We are over-represented in the legal accounting area and need to have more scientists and engineers.' Without access to Treasury tables he is unable to say how much he would have put into these areas.

"Executive director of the Information Technology Association Jim O'Neill supports the broad band roll-out. National broad band won't be commercially viable for some time, he says, so this is a good way to accelerate development. He was pleased to see the budget focus on economic development, and says if innovation and ICT is progressed, his members will benefit, so he is quite happy. Ernie Newman, chief executive of the Telecommunications Users Association, calls the regional broad band initiative 'quite visionary'. He is pleased the tenders will be contestable, leaving the way open for all delivery mechanisms. 'It's a real boost for the whole concept of enabling communication through high-speed networks.' The budget moves over broad band in rural areas are excellent, according to Chris France, executive director of the Schools Trustees Association. 'This been an issue for education for some time as the Internet has developed,' he says. He sees no reason why a school at the back of the West Coast should have less access to material than a school in Karori or Fendalton. How the Government manages the process is the real issue now, he says. He thinks another issue is how teachers will be trained to manage the new access, because it is unlikely that remote centres will have access to good training."

One potential entrant into the race is Walker Wireless. Here is their reaction to the announcement.

" **Schools' fast Internet access a hit with Walker Wireless boss**. Rod Inglis welcomes the budget allocation for fast Internet access for all schools, but has some reservations about the tendering process. 'It's a fantastic initiative to speed up the roll out of broad band in New Zealand,' said the founder and managing director of wireless communication company Walker Wireless. 'Our only concern is the tender process is handled fairly.' The Government has allocated 'tens of millions' of dollars over the next three years to ensure all schools can get fast Internet access. The exact amount of funding is not disclosed to ensure tenders are competitive, but Minister of Education Trevor Mallard said the amount was between $20 million and $99 million and would come from the contingency budget. 'It's starting to be meaningful money,' said Inglis, whose company is developing a nation-wide wireless network for fast Internet communication. Telecommunications suppliers will be asked to tender for the work region by region - stating how and what speed of access they will provide to schools, what penetration that would provide to the region, the starting time, and the cost per user. Mallard said the country would be divided into 15-20 broad band regions and a two-stage tender process would be managed by an independently appointed project manager.

'As long as they are specific like that, I think it will work,' said Inglis, adding that his major concern was that state-owned enterprise BCL did not get preferential treatment in the tendering process. Mallard said he envisioned some tenders would be consortiums offering a range of solutions including satellite, wireless and fixed wire access. He said the Government money could be by way of a direct subsidy to help the starting process or by way of underwriting. 'If the Government underwrites some of the risk, it will promote broad band competition quickly. Competition will accelerate the uptake of broad band which will be good for the country.' Mallard said the bulk of the money would be spent in the next financial year. He said the intention was to get good quality high-speed access - 'not wobbling along at 128Kbps [Kilobits per second]'. Mallard said the higher speeds were necessary for two-way video-conferencing to provide new distance learning opportunities for schools. Inglis said the Government had clearly taken notice of the Organisation for Economic Co-operation and Development (OECD) report which showed New Zealand's woeful uptake of broad band was hampered by lack of competition and high usage costs. New Zealand is ranked 20th out of the 30 OECD countries in terms of broad band penetration. The November (2001) report by the OECD also states that the minimum definition of broad band access its 256Kbps."

Well, we have an indefinite amount of money and a country divided into "between 15 and 20 rural broad band networks" using technology which the suppliers and the regional groups will sort out. Schools are the first priority target (they do, after all, impact the largest single group of voters). The last ten percent of the country (made up of "non-service pockets" within each of the "15 - 20" districts) will have to work out how it is going to fund the delivery of broad band on its own.

Costs? No guidance here. There are two major concerns. First is the cost of implementing (installing) the broad band capability. BCL has already demonstrated skills in this area, and as mentioned previously has in place or nearly in place the "digital microwave network" necessary to make delivery of "broad band" practical. Second is the ongoing service fees. There is no suggestion Government will provide subsidies to schools (or private users) to cover the monthly/annual cost of being connected to a 512 kbps link, full or part time. As CTD reported in February, the technology for this service is cutting edge. The "transceivers" necessary to connect users to the new BCL (or other - others are not ruled out from competing with BCL in this function) hill or mountain top stations do not exist except on paper. Chris Matthews was quoted in February CTD believing individual transceiver units would be priced in the region of (NZ)$1,500. But that was a guess. There are some existing-world examples which come close to the technology proposed here and guidance can be drawn from these hardware systems.

"**WiFi firms say they do it better**. The 802.11b standard may be underrated as a way to bring the Internet to distant areas while the Government focuses on broad band. Wireless communications providers who have installed high-speed Internet links serving some of the most remote locations say the Government broad band strategy ignores cheap and proven technology. Mike Dagg, sales manager at Chiliad Communications in Penrose, said Government-backed broad band pilot schemes seemed to be overlooking the 2.4 GHz 802.11b standard. This standard, known as WiFi, is commonly used for wireless local area networks but can also provide Internet services over long distances using a series of point-to-point links.

"'The Government seems to have spent an awful lot of money to investigate and write reports on this type of technology, but we have got operational services up and running for the same kind of money.' Chiliad has installed a 52km Internet and voice loop from Taupo to Poronui Ranch, a tourist lodge which provides hunting, fishing and outdoor activities for visitors from the US and Europe. Dagg said the lodge approached Chiliad after it had rejected a quote from Telecom for a fibre optic cable-based connection. 'I understand they were quoted $600,000 up front and then $5000 in line rental. Poronui is an upmarket facility, so they have to provide high-quality service to customers, but they couldn't run to that.' The link originates at the Taupo exchange and connects to the lodge via two relay stations which contain Chiliad-developed hardware - 'basically, a re-engineered Linux box with a Lucent card', said Dagg. While the 802.11b standard provides a maximum one-way data speed of 11 megabits per second (Mbs), the actual performance achieved degrades as the distance between stations increases. Dagg said the longest span of the Poronui link, a 35km leg across Lake Taupo, was achieving a two-way throughput of around 2Mbps. Chiliad says the system cost about $300,000 to install but the ranch pays a $5000 monthly fee for Internet and voice over Internet protocol (VoIP) services at three sites on its premises. Chiliad may now offer Internet services to other customers in the area. Dagg said performance levels could be maintained by adding a parallel connection using a different channel, or by upgrading to cards using the (new - yet to be activated) 5.8GHz wavelength, which would offer a maximum two-way throughput of 10Mbps - when they became available. Chiliad installed a similar system for the Matamata Piako District Council two years ago linking Matamata and Morrinsville to a backbone connection in Te Aroha and including a 40km leg from a relay station on the Kaimai Ranges to Matamata. 'We think we can get it to work farther than 40km, but so far we have never had a requirement to stretch it beyond that,' said Dagg. The Matamata wireless link replaced an expensive frame relay service as well as providing a 1Mbps Internet service to several outlying sites including a library and remote management of water supplies. 'As the water facilities are computer controlled, they are able to manipulate them remotely rather than sending someone 20 miles down the road just to turn a valve. The driving force behind using this technology is value for money, the economies of using radio equipment are just phenomenal.' Marc Cohen, managing director of Southland Internet service provider SouthNet, agreed that the 802.11b standard was being undervalued as a rural Internet delivery medium. SouthNet has installed about two dozen wireless links around Invercargill and Te Anau since it began offering the service last year. Cohen said WiFi technology was ideal for reaching pockets of geographically isolated customers. "We'll have a look at any town or company that can deliver a minimum demand of 20 users. I have no idea what's going with the broad band pilots, but while they are looking at third-generation technology, I'll just keep rolling out this service'."

Personal. As creator of CTD I have self-enforced a "rule" about mixing our own activities with CTD coverage of events from issue number one. I am about to break that rule because it is appropriate to complete this report on extension of broad band communication services into rural areas. Mike Dagg in the previous item notes, "basically (Chiliad) has re-engineered a Linux card with a Lucent card." This is techno-babble for non-technical readers so I will translate. Chiliad is using a group of license free (no Government approval required) channels set aside in the region of 2.4 GHz to create his up-to 40km links. Linux is an information processing software and Lucent is a US firm that manufactures "boxes" to interconnect digital data streams into (transmitter) and out of (receiver) radio frequency transmitters and receivers.

What Daggs does not detail in his interview reported above are the RF (radio frequency) portions of his links. 2.4 GHz transmitters employ a technology known as "spread spectrum" which means rather than using a single carrier frequency (such as 2.400 GHz), the information is widely distributed over a frequency range that could extend from 2.350 to 2.450 GHz. This is done on purpose as a way of improving the distances covered and the quality of the thru-put (data stream). In New Zealand and Australia, a frequency band has been established to allow low power (typically 4 watts as a spread spectrum system, 0.1 watts when a single carrier frequency is employed) transmitters to do precisely what Chiliad is doing; creating short range links for private purposes without the time consuming and often expensive intermediate Government licensing steps. Equipment designed and sold for this licensee-free frequency band usually must be "certified" as meeting the specifications (standard) Government has written covering such applications.

The 2.4 GHz frequency band which includes Chiliad's point to point links is not for their exclusive use. Rather it is a "catchall" frequency band where a wide range of unlicensed devices can "operate." Microwave ovens are one such user - inside of your home microwave is a quite powerful transmitter capable of turning raw, red meat into simmering brown meat in minutes. You can but imagine the power involved in this operation. Microwave ovens are unlicensed users of the same frequency band. So too are various "industrial and scientific" machines - diathermy, radio imaging medical systems, plastic bag sealers in facilities packaging grocery items are additional examples. The original concept was that all "radio frequency generating devices" which it made no sense to "license" individually would be grouped into a common band (2.4 GHz) so their transmitters would interfere with "nothing or nobody that was licensed - only one another." Virtually all 2.4 GHz unlicensed systems are transmitters only - there are no receivers out there picking up the emissions of a microwave oven and trying to extract "intelligence" from the "signal." Think of 2.4 GHz as a remand prison or jail for wayward radio frequency signals.

As CTD reported for February 2002 (p. 13), within the frequency confines of this "prison" clever chaps such as work for Chiliad have created low power transmitters and sensitive receivers which under most circumstances can function even when surrounded by the treacherous interference radiated by thousands of unlicensed microwave ovens and hospital radiology machines.

Now the "personal" portion. In our SatFACTS Monthly magazine for October 2000 (and after) I have been describing the development of a similar type of microwave equipment which is called SDS (see www.sdstv.com), or "shared dish systems." SDS tv.com, Limited is a firm formed by Gay and Robert Cooper to commercially exploit this equipment (NZ patent application filed and pending). SDS equipment was originally created to allow people to transmit from 1 to 24 separate channels of television over distances from a few hundred metres to 60+ kilometres as long as the distance covered is something known as "LOS" - line of sight. SDS operates between 950 MHz (0.95 GHz) and 2,150 MHz (2.15 GHz). It very purposefully uses wide band FM technology to transmit a TV image (from any source desired) with one, two or three companion sound (audio) channels.

This is equipment I have co-designed with the assistance of an old friend, John Ramsey of Ramsey Electronics, Inc. (New York state, USA). As of June 2002, SDS systems are widely deployed in Europe (UK, Ireland, Scandinavia), Africa (South Africa, Kenya, Madagascar), Asia (India, Thailand, Philippines, PNG, China) and the Pacific (more than a dozen island-state areas but not including Australia nor New Zealand). SDS has been advertising the equipment in SatFACTS Monthly for 9 months, has distributors in Europe, Africa and India and maintains two web sites as well.

SatFACTS advertising carries a well positioned notice stating that this equipment cannot be employed (used) in either New Zealand or Australia, "*unless the user is a (licensed) amateur radio operator*." Explanation. Within the frequency coverage band 950 - 2150 MHz is an amateur radio band (1240-1300 MHz) and SDS transmitters fit amateur radio "norms" when used within this amateur band. Thus an "amateur" (Ham) who *already posseses* a license for this band is able to use SDS equipment. Amateur use, however, precludes any commercial activity exploitation of the equipment within New Zealand (and Australia).

SDStv.com advertising in SatFACTS immediately attracted enquires from the Radio Spectrum managers at the (NZ) Ministry of Economic Development who expressed their concern the equipment "could be misused by unlicensed individuals" in New Zealand. MED also sent personnel to "visit with me" concerning the SDS equipment on three occasions, including a duo that travelled 500km from

Wellington. Their bottom line was, "This equipment does not satisfy NZ's radio regulations and must not be sold for use in this country."

I investigated creating one or more TV-channel-widths which would allow SDS equipment to operate in New Zealand, did extensive research and discovered that between 950 and 1450 MHz (a portion of the full SDS coverage capability) there are several frequency blocks which are totally unused (no licensed users at all) where SDS could be fit in without any risk of creating interference to others (example: 1215 - 1240 MHz). MED gave me no encouragement to follow this logic so interest at SDStv.com from me, relating to making my new technology available in New Zealand, quickly cooled. One of the more eye-opening demonstrations I gave of SDS capability was at the Auckland International Airport. There, with a hand carried small SDS receiver, SDS was demonstrated to Airport electronic technicians. We connected a SDS transmitter to their bank of security cameras and then wandered throughout the airport. Whether we were on escalators between floors, inside of elevators or wandering amongst the airport patrons, the tiny SDS receiver was receiving the same image as the security room's bank of monitors. I thought I saw a very practical application there - security personnel could dial up a specific security camera and actually "see" what the camera saw, no matter where they might be within the airport.

Now, it happens that the SDStv.com equipment is exceptionally low priced because of some very innovative technology. A complete 10km TV link (the transmitter, the receiver, all antennas and power supplies) is under NZ$900. It further happens that the user can substitute digital data (such as Internet linking) for "television" picture and sound by, as Chiliad's Mike Dagg notes, "adapting Lucent and Linux cards" in place of the normal TV image and sound information. In other words, SDS cares not whether the thru-put information is Internet data or television.

Absent any NZ-internal market for SDS equipment, and faced with similar restrictions in Australia, sales to the balance of the world have mushroomed. SDStv.com Limited and its USA parent will not hit US$1m in sales in calendar year 2002 but should easily top that benchmark in 2003. At one stage, SDStv.com would have been manufacturing the entire equipment line in New Zealand; that was before MED personnel displayed a lack of co-operation that bordered upon arrogance. Applications have exploded beyond the original one-way television concept - one weather proof version of the transmitter has a built in solar panel power collector and up to four colour television cameras - a self contained self powered video surveillance package which can be deployed by police or military personnel literally in minutes per location and transported easily in one outstretched hand.

Why do I share this "personal" revelation with you at this time? One reason is my disappointment that an agency of Government, with the mandate to seek out new and novel technology for encouragement and development as an export product that will ultimately benefit New Zealand's balance of payments, has such limited vision. Additionally, because virtually all of the hardware that will be deployed under the proposed "broad band initiative" will now end up being manufactured outside of New Zealand and its importation will ultimately detract from, not enhance, New Zealand's "balance of payment" statistics. The cause of this? New Zealand's MED has followed international guidelines in carving up and assigning the lower microwave frequency bands between 950 and 2150 MHz. If European and/or North American countries have set aside 25 MHz chunks of radio spectrum for DAB (digital audio broadcasting) "future development," New Zealand's MED frequency management personnel have rubber stamped the assignment. Never mind that this 25 MHz today is totally unused by anyone (there is no DAB even planned in this country) and furthermore is unlikely to be used for this purpose at any time in the next ten years-plus. Between 950 and 2150 MHz there are more than a dozen examples of MED's acquiescence to international decisions - some are beyond common sense (such as the frequency space set aside for the ill-fated, now bankrupt Iridium satellite system). Most are simply errors in judgement by personnel who have grown old in the same chair facing the same desk for too many decades and in the process developed strong liaisons with equipment and supply lobbyists which unfortunately tends to blur their vision and colour their decisions. Frequency bands are assigned for no reason other than, "this is what Europe has done" - never mind that in New Zealand there is no similar use or user and therefore frequency blocks so-assigned are totally empty. And as frequencies thus assigned lay there unused, wasting - new, unique to New Zealand, potential users are forced to do without. Is it any real wonder New Zealand has a "brain" and "technology" drain? I think not.

End of "personal."

For the record. As some aspects of the broad band roll out will attempt to utilise satellite delivery and relay of information, CTD felt you might like to know what sort of costs are involved to create an ISP (Internet Service Provider) fed by satellite. These are current pricings from a reputable supplier here in the Pacific region:

"**Complete down/uplink station**, no redundancy for (NZ) would be US$52,000. If simplex only, meaning downlink via satellite and uplink via local telco provider, it requires a 4.5m mesh dish, a good LNB and a DVB IP receiver (Rx is priced at US$1350). All equipment can be seen on: www.pacificip.com/download.htm. As for monthly fees, the standard lease is for a minimum of one year. If, for example, the bandwidth was 512 down and 128(k) up(link), the fee would be US$4995 per month. When the contract is signed, the (ISP) user will pay the first and last month's transponder use fee in advance (along with having purchased the uplink/downlink equipment)." These same charges, using a PanAmSat satellite (PAS-2 or PAS-8) would also apply to virtually any location in the Pacific served by these satellites.

Lest you believe the "broad band initiative" is only a New Zealand activity, the following two reports show contrary.

"**Extra satellites join broad band war**. Satellite telecommunications providers are upping the ante on Telstra's bush services, promising better Internet and communications for people living in remote areas. Two new satellites - the Optus C1 and the New Skies Networks NSS-6 - will be launched in the next 6 months, offering direct-to-home services. The C1 satellite, which Optus is sharing with the Department of Defence, has already signed a number of Internet and media contracts, while the NSS-6 is aimed at media companies and better business communications. The commissioning of the satellites came as the government approved a second Special Digital Data Service (SDDS) satellite Internet provider to compete with Telstra in providing broad band Internet to the bush.

"Melbourne-based ISP Hotkey will be able to offer its satellite Internet customers an industry-funded 50 per cent rebate on satellite service installation. Hotkey, which already has 60 satellite Internet customers in rural areas, charges $650 for an average set-up, delivering speeds up to 1Mbps. Telstra was previously the only SDDS-certified provider. The dominant carrier - which sold its satellite assets into a joint venture with Dutch telco KPN in 2000 - has also moved to reassert its satellite credentials, signing an airtime deal with handheld player Iridium (Coop's note: Iridium is being operated 'in bankruptcy' by a group of speculators). On the wholesale side, it will be a busy few months for Australia's telcos. C1 will be launched by Arianespace at the European Space Centre in Kourou, French Guiana, in December, while New Skies' NSS-6 will leave Kourou in November. It will be the first satellite launch for Optus in nine years, and the first ever for New Skies. Most of New Skies' parent company News Skies Satellites' network comes from privatised Intelsat interests and the 1999 acquisition of Australia's AAPT Sat-tel. Much of the Optus satellite capacity was inherited from the old Aussat. Both companies say their satellites will be well-placed for direct-to-home services, including broadcast and broad band Internet connections.

"'Optus can't offer global coverage, but we can'," New Skies chief executive Maureen Murphy said. 'We will compete directly with C1 in the broadcast market.' New Skies already provides a multi-country, 30-site voice and data WAN for the Federal Government, as well as a range of commercial services, particularly in remote locations. Optus satellite general manager Bob Murray dismissed the challenge, saying 800,000 satellite dishes were pointed at Optus' 150-degree (sic - 156E, ed.) location, making C1 the obvious choice, and Foxtel had already committed to using C1. 'The customers are closely locked into that location,' he said. 'C1 is ideally suited for direct-to-home in Australia because you don't get any blockages. We don't feel threatened, but we are not complacent because NSS-6 is a large satellite with substantial capacity.' Optus has also revealed a broad band Internet deal with the Northern Territory and NSW education departments, allowing schools to receive fast Internet and broadcast services on the same dish. 'We see a huge vista of opportunity with broad band,' Mr Murray said. 'It has applications in healthcare, and we are pursuing that market'."

Coop's comment: These are basically public relations department word wars. C1, according to Optus news leaks, is essentially sold out before it launches. NSS-6 is to be located at 95E, so far "down" on the western horizon that with the possible exception of the western 1/4th of Australia, too low to be good for any serious broad band consumer use. Furthermore, only 250 MHz (12.5 - 12.75) will be available on the Australian beam of this satellite - a fraction of the C1 capacity.

And then there is the suggestion that a satellite scheduled for redeployment in August by Intelsat sibling New Skies is being moved to a (new) Pacific location for the una vowed purpose of providing broad band Internet service to New Zealand's rural areas. First the press report that started this (misguided) story rolling.

"**Data goes two ways with New Skies service**. Dutch satellite operator New Skies Satellites expects to sell new two-way data services to broadcasters, telcos, Internet providers and direct to businesses. A satellite with 10 years' life left was being 'drifted' across space to service the Asia/Pacific region and would be operational by late August, replacing a 15-year-old satellite of lower capacity. Sydney chief executive of subsidiary New Skies Networks, Maureen Murphy, said the company was just in time to meet demand for rural Internet access for which funding was announced in the (New Zealand) Budget. She said New Skies had been planning the service for six months, working behind the scenes with businesses. However, no deals had been struck yet beyond its existing capacity deals with TVNZ. Murphy said the satellite would cover all of New Zealand with two-way high-speed service from 128Kbps to 2Mbps using small antennas. Capacity would also be sold on a wholesale basis up to 45Mbps. She said the satellite had a number of spot beams that were capable of delivering high-powered services, making it suitable for high-speed Internet, direct to enterprise services, and also for direct home-pay television."

Coop's comment: In fact, the NSS-803 satellite to be moved from 338.5E to 183E has been scheduled for this change over well before the six months New Skies claims (it first appeared in a proposed list of changes back in 1999, well ahead of any New Zealand Government initiative relating to rural broad band technology). Our view is New Skies saw an opportunity to gain some New Zealand press coverage by "intimating" some mysterious connection between moving NSS-803 to 183E and the sudden interest in rural broad band technology here. NSS-803, by the way, has limited Ku band down link capability and by being located at 183E it will have to take into consideration existing Ku band users on Intelsat I701 located at 180E, further reducing their spot beam channel/transponder capacity to New Zealand. About all it would be "good for" in actual fact is to provide a one-way IHUG-like downloading service - this is not a satellite designed to accommodate low power, small dish uplinkers. Sorry folks - this is a non-event even before there is an event.

And finally, in the USA, politicians are complaining about the lack of broad band accessibility in the more rural areas. It should come as no surprise to learn that 1/3rd of the Senators are up for re-election this year as well; politics and broad band are universal bed fellows.

"**Net speeding to rural areas?** Lowell Junkins, the director of economic development for Lee County, Iowa, would like to see a more modern economy take root in his area, but says his work has been hindered by a dearth of high-speed Internet access. 'It's absolutely critical that we be able to provide the kind of technology that's demanded by the new-tech companies, and we presently do not have that kind of technology available to us,' he said. Lee County and areas like it could get up to $2 billion to help connect to the information superhighway under a provision of the farm bill recently signed by President Bush. 'Whereas rural areas needed electricity to move them into the 20th century, they need broad band to bring them into the 21st century,' said Sen. Tom Harkin, D-Iowa, chairman of the Senate Agriculture Committee. Broadband uses cable or satellite signals to zap data back and forth at speeds 2,000 times faster than a normal telephone line. It also can carry high-quality digital video signals. And it can wipe out the geographic isolation that hampers economic development in rural America.

"The farm bill provides $100 million in low-interest loans and loan guarantees over the next six years to encourage private providers, cities, counties -- anyone with an interest -- to invest in broad band in rural areas. The loans are expected to generate as much as $2 billion in investment. Broadband access in rural areas has lagged because the scarcity of potential subscribers doesn't justify the high cost of laying cable or building satellite towers. According to a 2000 report by the Commerce Department, less than 5 percent of towns with fewer than 10,000 people had broad band access. The rate of access for populations above 250,000 was 65 percent. A report last December by the National Exchange Carrier Association, a non-profit entity created by the Federal Communications Commission, estimated it would cost about $10.9 billion to wire all of rural America.

"Rep. Tom Udall, D-N.M., who represents rural towns and impoverished Indian reservations in northern New Mexico, said the new federal program follows the model of the New Deal-era Rural Electrification Administration, which brought electric power to rural areas. 'I view us being hooked up to the Internet and the broad band service as just a crucial piece of infrastructure,' he said. 'Without it, areas of our country are going to fall behind, especially the rural areas'."

One more, closing, background piece which may help cement your understanding of why so many people firmly believe high speed Internet connections are essential in rural areas. This is another New Zealand report and you have to read between the lines to visualise how what it says could be further expanded if in fact the dairy farmers studied had broad band Internet available to their farms.

"**Wired guide to farming by numbers**. A farm management system that collects data electronically from farmers and science and industry agencies lays claim to radically change the business of farming. The system's developer, Waikato-based former farmer Peter Floyd, says his Cogent system allows farms to be managed in the same way as businesses such as McDonald's or The Warehouse. Sustainable gains in net farm profits of at least 20 per cent are claimed, and up to 60 per cent in some cases. Floyd says his farming-by-numbers approach is more than the usual farm management and advisory service because it integrates production and financial figures. For an initial charge of $990 and payments of $90 a week for three years, farmers join the system and receive a CD containing templates for collecting information each week. The chief element in the process is the production of key performance indicators showing the net profit of every kilogram of grass grown on the property per day, and the return on investment in the animals for that day. This can, for example, help a farmer to decide whether to remove stock for part of the year because drought is making the farm unprofitable. A coach helps farmers to set goals and use the results.

"Key performance indicators are not new to farming, but Floyd says his are unique because they dramatically reduce what farmers need to put in to collect data. 'We pick up the financials from the bank and milk company and all of the grass analysis comes electronically from the labs and data comes from the meat works. That is the powerfulness of the Cogent process.' Farmers measure the rainfall and the soil temperature. On a dairy farm, they add how many cows are milked each day and the supplementary feed.

But Warren Morritt, director of dairy consultancy Intelact, queries whether Cogent is unique. His company and others offer farm monitoring and advisory services using computer data analysis, systems and consultants. He also questions the value of daily or weekly monitoring, particularly for dairying, where it is not so easy to buy and sell stock in reaction to the weather. Morritt says farmers can get caught up in key performance indicators and focus too hard on them - but he agrees with the types of indicators Cogent is producing. 'We have certainly found that our most successful clients are those that increase production per hectare and per cow and increase pasture harvested per year. The grass is really what you've got your land for in the first place, so that you can convert that grass into milk solids production'."

"Floyd says anyone who thinks his or her system is similar to Cogent does not understand the way it works. 'It's a totally integrated system process looking at all the issues every day of the year. There are a lot of financial systems run by accountants, a lot of production systems run by farm advisers.' Marlborough sheep and cattle farmers Kevin and Carol Loe, who have used Cogent since field trials began, point to substantial growth. 'It took us from being a weak seller to being a strong seller by understanding our own strengths in our own environment,' says Kevin Loe. He says Cogent brings all the data together, puts it to use and helps avoid over-optimism. Northland dairy farmers Evan and Sherleen Smeath are also among the system's guinea pigs. 'We've certainly got some major advantages out of it,' says Evan Smeath. On top of better decision making, he has halved his accounting bills because financial data is already entered for the Cogent system.

"Floyd has worked on the system since 1991. He says he has tuned the system, working with around 50 customers. The target for this year is 500, then 5000 the year after. His company has six permanent staff. All the software has been developed using standard Microsoft tools such as Visual Basic, Access, Excel and Word.

Murdoch piracy case update

It may not be the biggest thing to happen to the world since "911," but charges that Rupert Murdoch minions were responsible for the deliberate cracking of a competitor's smart card security and then released the information on Internet piracy web site(s) thereby allowing the pirates to put his competitors at a disadvantage, continues to dominate the pay-TV world.

First this synopsis.

"**Where piracy and profits converge**. Are satellite TV hackers a tool in a global conspiracy? It's just a thin slice of plastic that's stuck into your satellite TV set-top box when you first bring it home. To viewers, the card is the key that unlocks pay-TV. To corporations, smart cards are much more — 80 million of them currently unlock one of the world's most influential and lucrative industries. But now, the plastic cards are at the centre of a global conspiracy theory — a cut-throat corporate battle some say, to control the world's living rooms through deception, cheating, and intimidation. The story comes complete with alleged corporate-sponsored hacking, a $1 billion lawsuit, mysterious cash payoffs shipped in hollowed-out VCRs, and even a suspicious death. The cloak-and-dagger world of pay-TV piracy is a fountain of rumour and innuendo that befits a Michael Crichton book or a James Bond movie. But it was all just that — a dramatic story line — until March, when a French firm filed a lawsuit that shined a harsh public light on this secretive world. Public filings the case have, for the first time, pierced its veil of secrecy, linking real-world programmers, executives and companies to the murky nicknames and alter egos of piracy.

"**Eye on Murdoch smart card maker**. And at least at the moment, the controversy swirls around a small British company owned by one of world's most powerful media magnates. That company, NDS, makes smart cards which unlock 28 million of the world's satellite set-top boxes. Owned by News Corp. and its flamboyant owner Rupert Murdoch, NDS now finds itself on the receiving end of a $1.1 billion lawsuit filed in March by French rival Canal Plus Technologies. Canal Plus comes with its own heavyweights attached — Vivendi Universal, and its now embattled CEO Jean-Marie Messier. The Canal Plus lawsuit claims NDS paid hackers to break the code in Canal Plus smart cards, then gave the information away on the Internet, all to undermine Canal Plus business. It's probably the largest computer hacking lawsuit ever, and one of the biggest accusations of corporate espionage. An NDS motion to dismiss the case was heard by a federal court in San Francisco May 30, although the judge did not immediately issue a ruling — that could come in the coming days or weeks. Meanwhile, depositions are set to begin during June. With Canal Plus lawyers vowing to wage a very public court battle, the next few weeks will likely raise the curtain on a 5-year drama, unravelling a complicated world where the interests of small time TV-pirates and moguls bent on dominating the world's media have at times overlapped rather neatly.

"**1997: Murdoch and Echostar**. Back in 1997, Murdoch's News Corp. was in negotiations to acquire EchoStar Communications Corp., operator of the DISH Network in the U.S. EchoStar would be a perfect puzzle piece for Murdoch, whose powerful portfolio of TV firms was missing a distribution channel in the lucrative U.S. market. EchoStar was a distant second to DirecTV in the U.S. market, but a rising star that appeared to have staying power. The deal stalled, however, and a dispute over smart cards was part of the problem, says one source familiar with the talks. News Corp.'s NDS had only one real competitor in the global smart card market — a Swiss company named Kudelski Group which makes cards under the 'Nagra' name. Nagra cards protected EchoStar systems, but News Corp. expected EchoStar to switch to NDS after any deal. already had DirecTV under contract, so a pact with EchoStar would give the firm a stranglehold on smart cards across the U.S. But EchoStar resisted, according to a source, insisting that it keep the option use Nagra cards after the deal. Not long after, the deal was scrapped, in part because EchoStar CEO Charles Ergen insisted on staying with whatever the best security technology happened to be, the source said. EchoStar later sued for breach of contract and settled out of court.

"**1998: Hacker found dead**. The following year, in 1998, NDS went looking for more smart card expertise and contacted brilliant German hacker Boris Floricic. Known as 'Tron' in the computer underground, Floricic was the author of well-regarded research paper about reverse engineering smart card technology. A few weeks later, in October of 1998, Floricic was found dead, hanging from a tree in a Berlin park. The death was ruled a suicide by authorities — a ruling many hackers reject There has never been any assertion that NDS was somehow involved in the death. But the fact that Floricic's father found a letter from NDS in his son's belongings indicated the company's willingness to consult the computer underground for security expertise. The incident also shocked the hacker community, which wondered if computer curiosity could now have deadly consequences.

"**1999: DirecTV deal set to expire**. Nagra cards and security issues continued to nag NDS the next year, as the firm's most important contract — with DirecTV — came up for renewal. NDS was planning an initial public offering to raise $150 million later in the year, so a renewal of its pact with DirecTV was critical. The only real NDS competitor: the Swiss firm, and Nagra cards. It's at this critical moment that the story heads underground. At the height of the DirecTV-NDS renegotiations, a now-infamous computer file named Secarom.zip appeared on a pirate Web site DR7.com on March 26, 1999. Secarom.zip was the master key to European satellite provider Canal Plus, a slice of code that pirates to create fake smart cards that foiled the security measures built into those systems. At the time, Canal Plus was chief rival to BSkyB, Murdoch's European satellite broadcast system. In no time, a cottage industry for Canal Plus pirate cards formed and at one point, nearly three million of four million users in Italy were pirates, according to Canal Plus. In its lawsuit, Canal Plus alleged NDS was ultimately behind the hacking of its system, and the cottage industry that formed later, costing Canal Plus over $ billion in lost business. According to the lawsuit, an NDS lab in Israel cracked the Canal Plus cards, which Canal Plus developed in-house. Then, the company made sure the crack was published on the Internet in a place where pirates were sure to find it. NDS denies Canal Plus' the claims.

"**More hacking allegations?** But there were other accusations flying around in the hacker community, too. Around the same time the code to Canal Plus' smart cards appeared on the DR7.com Web site, so the a master key to pirating EchoStar television and their Nagra smart cards, according to a administrator of the (web) site. In fact, the code was published by the same cast of characters who released the Canal Plus code, suggesting a link between the two acts of piracy. If, as Canal Plus suggests, was behind the Canal Plus card piracy, it was behind the EchoStar piracy too, the (web site) administrator says. E-mails to the administrator of the current DR7.com Web site currently go unreturned. At any rate, with the secret codes to both NDS and Nagra smart now public, the playing field in the card business was level. By August of 1999, NDS had a new four-year contract with DirecTV. However, the contract contained an important escape clause — that DirecTV could develop its own in-house smart card technology and dump NDS at any time NDS declined to comment on the accusation that it was somehow connected to the EchoStar hack. spokesperson Margot Field said the company, 'does not respond to rumours or supposition'. Nagra card maker Kudelski Group and EchoStar also declined comment. But a spokesperson for Canal Plus said the company had talked with EchoStar about the incident, and EchoStar had expressed interest in joining its $1.1 billion lawsuit against NDS.

"We have been contacted by many entities that have been harmed by NDS activities, seeking to either assist us or to join in the lawsuits, and that would include EchoStar," said the spokesperson, who requested anonymity.

"**Cash stuffed into VCR**. The months following March of 1999 were the glory days for TV pirates, with trade in pirate cards mushrooming at a multi-million dollar pace. A 'fresh hack' could be worth up to $5 million, according to one estimate. Pirate dealers in Canada could sell the cards with relative immunity, since by a quirk of law piracy was legal north of the United States. But money flowed back into the U.S., too, evidenced by a series of high-ticket lawsuits NDS and DirecTV brought against individual dealers. In one case alone, won a $19 million judgement against Quebec residents Reginald Scullion and his wife, Frances Callan for selling pirate equipment to a set of 80 dealers inside the U.S. during the late 1990s. Rumours about the thriving pirate smart card trade abound. The most popular involves the discovery later that year of a VCR stuffed with $50,000 cash that was stopped at the Canadian border by U.S. Customs officials. The payment is now legend — never verified publicly — in the TV pirate community. The money was one instalment of cash headed from Canada to the U.S., allegedly sent by the operator of DR7.com. It was headed for a hacker named 'Von,' payment for supplying the code to hack a major pay-TV system. But the VCR caught the attention of customs officials, who began investigating. No arrests were made connection with the incident, and there are no public records indicating it ever happened. But soon after, things got dicey in the pirate-TV world.

"**Canal Plus Investigation**. At almost the same time, lawyers from Canal Plus Technologies began their own investigation. Why were Canal Plus smart cards hacked so fast? Who would have the technological know-how to crack the cards and the incentive to see their technology exposed? The answer, according to Canal Plus lawyers: NDS.

"**Giving away Canal Plus smart card secrets** was the same as giving away their pay-TV for free. It would ruin the company, and clear the way for Rupert Murdoch's competitive offering BSkyB. In filings connected to its lawsuit, Canal Plus identifies Von as Chris Tarnovsky, the NDS employee. Von, also known as 'Big Gun' to pirates, was a bit of a legend in the underground. He designed (the) so-called 'battery card' in the early 90s, the first technology used to steal DirecTV broadcast signals. Tarnovsky, like Floricic, was an expert in smart card technology who lived in Germany. But like many hackers, he spent considerable time researching in the hacking underground, and now many accusations say he spent a good deal of time on the wrong side. And apparently, Tarnovsky's murky background didn't scare off his future employer.

"**2001: Murdoch wants DirecTV**. While Canal Plus lawyers researched the possible unholy alliance — and according to some sources while EchoStar did its own fruitless investigation into NDS — piracy against DirecTV ramped up According to one informed source, piracy rates nearly doubled as the year 2000 drew to a close. Drastic measures were necessary: NDS and DirecTV planned a massive electronic countermeasure designed to zap pirate cards sitting in set-top boxes. The 'code bomb' exploded on what pirates know as 'Black Sunday,' just before the 2001 Super Bowl. Some 300,000 pirate cards were claimed zapped. But within months, according to the source, most were back stealing signals, and DirecTV's frustration with NDS grew. But at the same time, NDS' parent was about to make a bid to buy DirecTV. Only a few weeks before that Super Bowl Sunday, Murdoch indicated he was ready to make another aggressive move to acquire a U.S. satellite broadcaster. This time, Murdoch's News Corp. launched a $30 billion bid to pluck DirecTV from Hughes Electronics in January. The deal would have made Murdoch's SkyGlobal — already with assets in Europe, Asia, and Latin America — the largest television platform in the world.

Alas, Murdoch's timing was off. As the technology stock market began its southern migration, the purchase price for U.S. market leader DirecTV became more reasonable, and negotiations heated up between the two firms. Once again Murdoch was on the brink of a deal, and once again, it was snatched away — and once again, smart cards could be blamed. Nine months after word leaked out of Murdoch's bid, U.S. rival EchoStar swooped in with a last-minute offer that trumped News Corp. The pot had been sweetened by a $1 billion kick-in from Kudelski Group - the Nagra card maker. The kick-in made sense; if Nagra could wrestle DirecTV's business away from NDS, it would add some 40 cents per share to the company's bottom line The deal was approved by the two companies in October 2001, but it faces an uncertain regulatory future — because it would create one firm that overwhelmingly controls the U.S. direct broadcast market, the Federal Trade Commission is reviewing the deal at this time; the FCC will do so next.

"**2002: DirecTV moves to drop NDS**. But already, there is apparently fallout for NDS. In April, DirecTV announced it would sever ties with Murdoch's smart cards, saying it would exercise the 'out' included in their 1999, four-year pact. DirecTV will develop its own smart cards, the announcement indicated. It would also immediately act to replace all current customer smart cards, a swap-out that's expensive and time-consuming (nine months long, US$100 million expensive). This news trounced NDS stock, coming hardly two weeks after Canal Plus filed its lawsuit against NDS. DirecTV spokesperson Bob Marsocci said the timing of the announcement had nothing to do with Canal Plus lawsuit; and NDS spokesperson Margot Field, in an e-mail, said 'NDS continues to have good relationship with DirecTV,' and noted that NDS will continue to earn revenue from its relationship through August 2003. In fact, NDS is being paid according to the 1999 contract renewal essentially to 'stay out of the way' while DirecTV engineers endeavour to correct the hacking level of their service, now estimated as high as 25% of all viewers A source familiar with the situation revealed that DirecTV has been frustrated with NDS for some time, and that NDS employees were barred last year from working on any DirecTV conditional access systems related to smart card production. Another source confirmed that DirecTV's relationship with NDS had grown increasingly rocky over recent years, as DirecTV became more frustrated with apparent inability to keep hackers from stealing signals.

"**Fears for his life**. Back to the present, where pirates, TV companies, and journalists are closely watching developments in the Canal Plus case. More answers, and more entanglements are bound to emerge as discovery proceeds in the Canal Plus lawsuit. But one thing seems clear — in this high-stakes story, fear has kept many potential sources hidden behind nicknames or away from the lawyers and journalists altogether. Oliver Kommerling, another German smart card expert, has emerged as a whistleblower and key witness so far. Kommerling, who runs a firm half-owned by NDS, has filed papers in support of Canal Plus' lawsuit, directly accusing Tarnovsky of publishing the rogue code on DR7.com. Kommerling and Floricic shared a common friend, Marcus Kuhn — both have written papers with Kuhn on reverse engineering cards. Floricic is now dead, and Kommerling admits he has felt 'pressure,' since filing his assertions with the court. And if Canal Plus security manager Gilles Kaehlin is to be believed, Tarnovsky is scared, too. In a written statement to the court, Kaehlin says Tarnovsky admitted to him NDS was behind the smart card hack, and that he was prepared to tell the truth in court. But, the filing says, Tarnovsky refused to be the whistle blower on NDS' illegal activities, 'because he feared too much for his life and that of his family,' Kaehlin said.

"**Questions remain**. There are still many questions surrounding the current allegations against NDS. Why would such a successful security firm take such as incredible risk, in fact risking its entire reputation, to interfere competitors? In the computer underground, conspiracy theories are rampant. Unlike most hobbyist computer hacking, pirated pay-TV cards are a lucrative business, cards can sell for hundreds of dollars each. Complicating matters further, the legality of sales in this 'gray market' is somewhat murky in Canada, and there's suspicion that satellite dealerships, distributors, and even company insiders profited from aiding Canadian 'gray market' dealers. There's also a long-standing notion that piracy is good for the business. In an odd twist, tacitly allowing people to watch pirated TV is a way to gain market share, since many pirates eventually give in and convert to paying customers.

"TV pirates generally can't make new smart cards — they have to use real, corporate-issued smart cards, which are then altered via software. Millions of extra smart cards seem to have somehow gotten into pirates' hands over the years. Who made all those extra pieces of plastic — and how did they get out of the hands of manufacturers or legitimate dealers? In fact, some say, firms like DirecTV and Canal Plus have gotten what they deserve — tacitly allowing piracy was a mistake that got out of hand. Now, all these firms must have security departments that cozy up to hackers to keep up with the pirates, and employees who have less-than-perfect backgrounds. NDS' troubles, they say, are just the first to see the harsh light of a courtroom."

In the middle of this financial intrigue, Britain's pioneer terrestrial digital broadcaster iTV has folded. One of the reasons given for the fiasco that leaves an estimated 1.2 UK home with nearly useless set-top terrestrial decoder boxes is piracy. Executives at iTV Digital claim NDS promoted the hacking of their smart cards through funding of a Britain based web site that distributed hacking instructions to defeat iTV subscriptions. Still, even absent piracy of their product, could iTV as structured survive against a well established satellite delivered competitive product at BSkyB? These reports.

"**ITV Digital**: **Where did it all go wrong**? So it's over. ITV Digital, launched on the dream of challenging Rupert Murdoch's BSkyB, has pulled the plug. Administrators Deloitte & Touche's terse statement, that 'unfortunately there is no appetite in the market for a preservation of the business', and to hand back ITV Digital's broadcast licence was met by the regulator's announcement to launch a fast-track process to find another digital broadcaster. ITV Digital's giddying drop into the abyss was in sharp contrast to its launch party, when stunt men swung over the Thames and its backers' hopes spiralled high. Oh what a party is was. The extravaganza which launched The Can. Sorry, Mint. I mean, Set TV. Um, actually, ONdigital, as British Digital Broadcasting was eventually renamed, after spending £100,000 on brand consultants. ONdigital chiefs were, that August 1998 day, able to celebrate the creation of a rival to Rupert Murdoch's BSkyB in the sweet knowledge that they had received Mr Murdoch's help in doing so. BSkyB had, with Carlton and Granada, been one of British Digital Broadcasting's original backers, but was forced to pull out over competition concerns.

"**Sniping at Sky**. So it was perhaps an overconfident Stephen Grabiner, ONdigital chief executive, who sniped that Sky only attracted viewers who spent their days, 'fiddling with an electronic programme guide. Sky is for sad people who live in lofts,' Mr Grabiner taunted. ONdigital, meanwhile, would be for discerning Britons who knew what they liked, and could find it through 30 channels, rather than 200. But whereas the ONdigital stunt men who bungee jumped off Battersea bridge that day juggled their launch figures correctly, the broadcaster itself came to realise that its business plans would build only a castle in the air. And that it had underestimated Fortress Sky.

"**Vital statistics**. For ONdigital's problem was not so much that it failed to attract viewers. The broadcaster was launched with a target of winning 2 million viewer homes by 2003, and, on a cumulative measure, was probably on target to achieve that. But one trouble was that so many subscribers left. Almost one-in-four of the broadcaster's viewers had quit in three months, Carlton and Granada admitted in February. And this turnaround only added to the cost of winning subscribers which, largely because of BSkyB, was far higher than the firm had bargained for."

Coop's interruptive comment: I remain baffled how iTV cannot draw the obvious connection between "1 in 4 viewers quitting in 3 months" and the proliferation of piracy. The iTV folks, perhaps preoccupied with closing down the service, have shown support but apparently limited ability to be an active part in the Canal-Plus NDS lawsuit. iTV has variously claimed "up to 100,000 viewers using piracy smart cards" or perhaps 9% of their subscriber base. What that admission does not explain is the remaining 16% of original iTV digital subscribers who simply "gave up" on their subscriptions. Yes, a percentage of the total would be unimpressed with the viewing fare and simply refuse to continue the service, perhaps as a following report claims moving upward to BSkyB. But that does not explain what happened to the set-top boxes freely distributed by iTV digital and their companion iTV issued smart cards which in the hands of pirates were easily converted to "free TV viewing cards:" for a paltry fee (typically 30 BP one time cost). Even after subscribers stopped paying for their service the iTV boxes remained in circulation and as we now well understand, that is step one to wholesale piracy. Continuing the report ...

"**Broadcast battle**. The critics who thought BSkyB would end up cooked in its own satellite dishes saw the broadcaster unveil its own digital package. First. So the ONdigital service was launched into a hostile environment, which became only harsher as a struggle for viewers commenced. Both broadcasters dropped to zero their charges for set-top boxes and, where needed, dishes required to view programmes. Both waived £20 connection charges. And while both companies suffered, at least BSkyB had a history of profits, and an existing customer base, to lean on.

"**Hollow boast**. It also offered, for an extra £2, far greater programme choice. ONdigital was to find that the digital TV market was more related to the niche-ridden magazine market than the four-button world of traditional UK television. The broadcaster claimed, and continued to boast, that it was the first company to launch a digital terrestrial TV service (in the world). But the only viewers who could readily understand this concept were the kind of anorak customers who, according to Mr Grabiner, preferred Sky.

"**Defection**. It was in fact through Mr Grabiner that the writing first appeared on the screen for ONdigital, when in July 1999 he left to join a Murdoch-backed Internet venture. (This was the same Mr Grabiner who a year earlier had said: 'I believe deeply in what we are doing. My own career substantially depends on this... I am the lead architect.') At the time of his defection, observers were still unsure whether Mr Grabiner was following the dictum, 'if you can't beat 'em, join 'em', or whether BSkyB was using the kind of tactic British Airways appeared to use when hiring EasyJet's main legal adviser. The 'if you can't beat 'em (or at least are worried you can't) hire 'em' approach.

"**Last ditch effort**. Last year it became truly apparent which version was right, when Carlton and Granada, which have poured more than £800m into ONdigital, were forced to play their trump card. They harnessed the ITV brand, 'the most powerful in British commercial television', to ONdigital in an effort to drag the broadcaster - as ITV Digital - into profitability. And, taking a leaf from BSkyB's schedule, ITV Digital bought heavily into football and in August launched ITV Sport. Yet it was the wrong kind of football. Lower division muddy-kneed stuff, rather than the silk-shorted Premiership fare promoted by Sky. ITV Digital found it was again delivering a limited version of a BSkyB service. And when the 11 September attacks undermined an already wobbly advertising market, it seemed that Fortune as well as Carlton and Granada shareholders had ditched ITV Digital.

"**Lessons from hindsight**? Was there ever a niche for ONdigital? Were the right managers hired? Would the service have been better off called The Can, Set TV, or Mint? As for the name, while we will never discover if Mint would have made a fortune, we do know that the marketing consultancy which advised on ONdigital had earlier backed BA's doomed drive to redesign its tailfins."

As could be anticipated, people accustomed to 30 channels of television suddenly having their total reduced to 4 or 5 immediately began to look for options. Well, one option - the only one - to satisfy their TV addiction. As a wise Canadian recently observed, "*pay-TV is like heroin. Once you have it in the home, there is no substitute. You will do almost anything to satisfy the habit - withdrawal from dozens of channels to a handful is a very painful experience.*"

"**Sky benefits from ITV Digital demise**. BSkyB has admitted it is already seeing the benefits of the collapse of ITV Digital. The company is expected to pick up around 300,000 of the 800,000 subscribers abandoned by Carlton and Granada when they closed ITV Digital. Until now BSkyB has anxious to portray itself as a loser in the wake of the collapse of the terrestrial digital TV venture. The company was paid some £64m from ITV Digital for the supply of Sky Sports, Sky Movies and other premium services. But Martin Stewart, the chief financial officer of BSkyB, has now admitted it had benefited from the company's collapse. 'We have seen sales pick up since the switch-off of ITV Digital,' he told Reuters in an interview. Despite the expected loss of wholesale revenue from ITV Digital, Mr Stewart said that would be outweighed in the future by migration of former ITV Digital customers. Many will have been attracted by a marketing push with newspaper adverts offering a free Sky dish and digibox."

With the demise of iTV Digital in the UK and a very similar Spanish DTT service, one might suspect that pay-TV via smart card "protected" terrestrial transmitters has suffered a major setback. The ever optimistic EBU believes contrary as this report explains.

EBU study: DTT has good prospects. Digital terrestrial television (DTT) has better prospects than might be suggested by the failures of the UK's ITV Digital and Spain's Quiero, according to a new study published by the European Broadcasting Union (EBU). Key findings of the study include:

* Almost all European countries will have launched DTT by 2005.
* Other countries are looking beyond the pay-TV model adopted by ITV and Quiero.
* Interactivity, Internet, portability and mobility will not be strong drivers.
* Equipment prices are reaching mass adoption level.
* Public service broadcasters are at the forefront of DTT developments.
* Most government target dates for analogue shut-off do not reflect realistic market conditions.

Finland will have a strong DTT offer by autumn based on an open market for set-top boxes, a common technical standard and strong co-operation among broadcasters. France will launch 33 DTT channels in autumn 2003, including many free-to-air. Sweden is considering a variety of new approaches, including vouchers for free set-top distributed to TV households paying licence fee. The Netherlands and Portugal will be on-air with DTT before the end of the year, with platforms backed by a broad coalition of key market players. Norway and Denmark may consider accelerated switch-off plans for analogue broadcasting that could leapfrog the countries ahead in DTT development. Quiero TV has been shut down, with estimated losses of more than EUR500 million. ITV Digital has ceased operations and its licence will revert to UK regulators. The report also says new ventures will have learned from Quiero and ITV Digital to avoid direct competition with cable and satellite pay operators and to steer clear of the set-top box business.

As CTD reported in May, Canadian gray market subscribers to USA DirecTV and DISH TV has now been ruled "illegal," directly affecting an estimated 700,000 Canadian homes. Some of these homes, no accurate figures here, were paying for the service through surrogate mail addresses established inside the United States. Others, again no hard numbers, have been watching USA pay-TV using variations of the piracy smart cards so commonly available in North America. These two reports highlight the present situation which borders on chaotic.

"**In Satellite Piracy War, Battles on Many Fronts**. The palm-size cards started appearing last year at USA/Canada border inspection points. They were stashed in glove compartments and trunks. Tucked into pockets and wallets. Hidden in brown paper packages. Drivers tried too hard not to appear nervous, and flubbed explanations when questioned by American customs inspectors. A new kind of contraband was trickling across the border from Windsor into Detroit along with the pseudoephedrine and the Cuban cigars. Initially, United States customs officials say, they found the cards puzzling. They looked innocuous enough — blue plastic cards imbedded with computer chips. As the inspectors investigated further, it soon became clear to them that Americans were flocking to Windsor (Ontario) for more than the second-rate casinos and strip clubs. They were crossing the border to an illicit desire of a different sort: one for pirated satellite television. In the past few years, satellite TV piracy has become a multimillion-dollar industry in the United States with as many as two million households, by some estimates, illegally obtaining programming from nation's two big satellite providers, DirecTV and EchoStar. The desire to tap into satellite channels without paying the monthly fees has spawned a loose distribution network of fly-by-night dealers and Web sites, raids by law enforcement agencies, and an electronic cat-and-mouse game between the pirates and the satellite companies.

"But if piracy has become big business in the United States, it owes a lot to Canada, where until recently it was legal to receive pirated satellite signals. In border cities like Windsor, a mini-industry of pirate providers flourished, selling the means for Americans, be they individuals or dealers, to gain access to satellite programming. But now, that industry is reeling from a Canadian Supreme Court ruling in late April that it was illegal for Canadians to watch American satellite television. Stores were closed and equipment removed, and several online stores have shut down. But dealers say that the demand is too great and the business too lucrative for the industry to disappear entirely. It will either move offshore or underground, many dealers predict, ensuring some sort of supply chain for Americans. 'All they really do is push it below ground,' said Adam Dicker, owner of Satan's Playhouse, a chain three satellite television stores in Toronto. 'It's the dealers they want to put out of business, but we only get more business.' In satellite piracy, the cards are the keys. Inserted into an inexpensive receiver, a card unlocks the streams of entertainment to a user who points a small dish antenna in the right direction. Legitimate users pay a monthly fee to unscramble the signals. But a satellite access card can be transformed to a free card through reprogramming. What was once available only by subscription — basic channels and premium services like HBO, pay-per-view movies and sports — can be viewed for the one low price of hiring someone to hack the card, anywhere from $20 to $50 a pop. 'It's like heroin,' said Joann Kolonelos, a dealer at DSS Pirate, a satellite piracy store in Windsor whose clientele has been approximately one-third American. 'Once you have access to all those channels, all those movies, you can't give it up'.

"The satellite companies and law enforcement agencies call it theft, plain and simple. The companies, which together have about 18 million paying subscribers in the United States, hesitate to put a figure on the price of satellite piracy. But cumulatively, the cost of enforcement, legal action and lost revenue has probably run into the hundreds of millions of dollars, according to industry experts. In 1997, DirecTV was awarded damages of $33 million as a result of a single lawsuit against 30 dealers in Seattle. DirecTV, whose encryption system was cracked before EchoStar's, is pouring money and people into its anti-pirating division, the Office of Signal Integrity. The office helps law enforcement agencies conduct frequent raids on satellite dealers across the country. In three raids on a single day in May 2001, for example, police officers confiscated $4.5 million in satellite piracy paraphernalia in Orange County in California. Since the beginning of this year, there have been 33 seizures of satellite access cards by customs inspectors in Detroit alone. In the USA, satellite piracy is a federal crime punishable by up to five years in prison for dealers and one year for viewers, in addition to fines. But many scoff at the idea of getting caught. 'There are so many people doing it, it becomes socially acceptable for you to do it too,' said a hotel manager from Detroit who spoke on the condition that he not be identified. The manager, who went to Windsor to obtain cards and satellite equipment, started pirating signals in 2000 when he became frustrated with his high cable bills. He crossed the border because Canadians were able to exploit a discrepancy: government jurisdictions stop at borders, but satellite signals do not. Piracy of American satellite television could not be challenged in Canada because the companies are not licensed in Canada. And while there are two Canadian satellite broadcasting providers, the appetite for American programming is overwhelming. Today, estimates up to one million Canadian households — about 10 percent of the population — are watching American satellite TV, in many cases without paying DirecTV or EchoStar. Satellite dishes sprung up on Canadian houses like gray mushrooms after a spring shower. Piracy Web sites flourished, and hundreds of stores opened as legitimate tax-paying businesses. In Windsor alone, 40 piracy emerged from 2000 to 2002. Classified ads were filled with offers to hack satellite cards. By serving as wholesalers to dealers in the United States or selling to individuals who crossed the border into Canada, hackers and piracy shops nurtured the temptation for Americans to steal satellite signals.

"How far are people willing to go for television? Windsor dealers say that customers have driven from as far as Oklahoma, West Virginia and Texas. Some have bought dozens of cards to sell or give to friends. Some Americans who could not get to Canada mailed their cards to friends in the Detroit area with pleas that they be returned 'before the big game', said the hotel manager. The access cards are a valuable commodity. One Satan's Playhouse store was held up at gun point last year, said the owner, Mr. Dicker. The thieves made off not with cash but with hundreds of satellite cards worth tens of thousands of dollars. To create the finished product, Canadians have had to look to the United States for the original cards. Last year the Canadians found a new source across the border for large volumes of low-priced cards. Wal-Mart, which like many retailers was selling DirecTV systems, which consist of a satellite dish and a black-box receiver, for a heavily subsidised $50. Canadians printed out maps of Wal-Mart locations from the Internet and headed for the border, said David Fuss, the president of Incredible Electronics, a major Canadian wholesaler. They bought the systems by the hundreds and the thousands. But what Canadian dealers wanted were the included satellite cards, which could be hacked and sold for $150, a handsome profit; the black-box and accessories were often dumped in trash bins in America as soon as the systems exited Wal-Mart. DirecTV's accounting showed that hundreds of thousands of cards disappeared into the vortex of piracy during that period. Last fall the satellite company started shipping systems to Wal-Mart without the card.

" **'It was costing us a lot of money**,' said Larry Rissler, the head of DirecTV's Office of Signal Integrity. Now subscribers who buy from Wal-Mart have to order the card separately from DirecTV. Last year DirecTV hired five law firms to mail cease-and-desist letters to American addresses obtained from raids on dealers. To date it has mailed over 7,500 letters. 'We are going after the users,' Mr. Rissler said. 'We are trying to teach them a lesson.' The company is also fighting fire with fire, with its engineers hacking to fight the hackers. The Office of Signal Integrity designs little bits of code with a name that evokes cold war weaponry: Electronic Counter Measures, or E.C.M.'s. The E.C.M.'s, which travel up to the satellite and down to the cards, are the equivalent of heat-seeking missiles. When they find a card that has been hacked, they destroy the programming on it A few months ago, DirecTV stepped up its E.C.M. attacks to two or three a week. Within minutes of attack, dealers said, their phones would start ringing and people would begin lining up in front of the Windsor stores to get their cards reprogrammed. 'It's television,' marvelled Patrick Reid, manager of Pirate Satellite, another store in Windsor. 'It's supposed to be entertainment. But for some people it's critical.' Some viewers have found a remedy to the E.C.M. attacks: they are buying the hardware to program and fix the cards themselves. The devices, called loaders and unloopers, hook up to a PC. After an attack, hackers devise a software remedy and distribute it on the Internet. Within a day, most people are up and running again. With a PC and an Internet connection, anyone can now be a pirate. The price of hardware has plummeted as competing manufacturers have flooded the market. Equipment that used to cost several thousand dollars has dropped to $100 or $150. 'Everybody and their neighbour has a programmer these days,' said Rod Freire, a satellite installer in Windsor who has five satellite dishes on his house. Still, the Canadian Supreme Court decision on April 26 changed the picture. The ruling that it was illegal for Canadians to watch American satellite television came on a Friday, and over the weekend, satellite piracy in Canada came to a stumbling halt. Storefronts were shuttered and Web sites were pulled down. Apologetic signs went up. Customers panicked. What would they do without their satellite TV??? On Monday after the ruling, the shelves and tables in one Windsor store were bare. The owner had stripped out all his equipment over the weekend. But customers kept calling. 'I can't talk to you on the phone,' the owner said. 'You can come here and we can talk face to face.' Customers wandered into the store one by one. An older man pulled a small envelope out of his and took out a card. 'Do you still . . . ?' he asked. 'We don't program anymore,' the proprietor said firmly. Well, at least not officially. The owner then asked the man to leave his name and number on a piece of paper. 'We'll contact you,' the owner said. 'We'll work something out.' The owner, who spoke to a reporter on the condition that he not be identified, said he would probably start making house calls but that his prices would go up. But satellite piracy will continue, dealers say, with Web sites moving to offshore servers and more viewers buying the hardware themselves. Decoder News (decodernews.com), for example, a site that had been operating out of Toronto, plans to move its server to the Caribbean. 'If you never give kids candy in the first place, they'll be O.K.,' said Mr. Dicker, the owner of Satan's

Playhouse. 'But you can't give kids a bunch of candy and then take it away. The same is true for satellite TV'."

And this unabashed "hate article" addressed openly to the Canadian TV world from a Montreal newspaper.

"**Canadian TV sucks**. A common television viewer's lament: so many screens, so little worth watching. It's good thing that Canadian television broadcasting still has its integrity. It almost makes up for lame programming and lack of choice. Last month, the Supreme Court of Canada ruled that it is illegal for Canadians to decode American satellite television. In a press release (April 26) Industry's Allan Rock said, 'Today's Supreme Court decision helps preserve and ensure a strong and Canadian broadcast industry.' Heritage Minister Sheila Copps chimed in: 'It clearly is a gain for the integrity of the Canadian broadcasting system.' And a loss for those of us who are stuck with Canadian cable and satellite. The Supreme Court decision means that it is no longer a legal gray area for Canadians who receive pirated American satellite signals - it is now illegal. A May 9 article in the New York Times described the lively trade south of the border where Canadians obtain satellite cards that unscramble signals from U.S. providers in order to receive American programming otherwise unavailable to them. Do Rock, Copps et al ever watch what's on Canadian cable or satellite? If so, perhaps they'd stop waxing poetic about integrity and vibrancy and ask themselves why one million Canadians are engaging in satellite piracy.

"Who needs American satellite when we now have all these great digital cable channels and our own satellite providers with all this vibrant programming? The answer is very simple: Canadian TV sucks, satellite, digital or analogue. Canadians are tired of waiting three years to see TV shows from HBO when they finally show up on network television, tired of being stuck behind the ageing iron curtain of Canadian broadcast regulations and bored with the lack of choice provided by Canadian networks, all of whom are owned by the same three corporations.

"**Paucity of content**. I subscribed to Vidéotron's digital TV service last summer and it's specious at best to be touting, 'integrity' while making it illegal to get American satellite signals since digital cable seems to operate with promise as its premise, luring viewers in with exciting promos but bearing a paucity of content, original or otherwise. Canadian digital channels have sprung up like dandelions in May, but after a few months, it's clear that promise has an expiry date and so does their programming, which seems to repeat itself endlessly while we pay enormous fees for equipment rental, service and installation. The networks will say, in their own defence, that they don't yet have the money for original, quality programming, which begs the question: why exist at all? For advertising of course, in between which are movies I have seen and don't want to see again, don't want to see at all, can rent on DVD or see on another channel 10 times next month. The promise is that if we wait until they make money, we can see all kinds of great stuff - in the future.

"Equally dishonest is the use of American brand-name recognition - using the names of American networks on second- and third-rate Canadian products. I was attracted to digital cable by the possibility of getting channels such as Fox Sports, Prime, Documentary Channel and OLN. The latter is the only network in North America to broadcast coverage of cycling and mountain biking. Both of these are virtually ignored by Canadian sports broadcasters who seem to regard cycling as the domain of European sissies with shaved legs, and mountain bikers as 20-something flakes in baggy shorts who say things like "awesome dude" (this in spite of the fact that the top mountain bikers in the world are Canadian, including world champion Roland Green). However, I discovered that it's OLN U.S. that shows all those cycling races; OLN Canada airs only the Tour De France, which is sort of like showing only the Super Bowl or the Stanley Cup final. The rest the year's schedule is taken up with hour upon hour of lumberjack and strongman contests, dogs and infomercials for Bowflex. While viewers around the world watch the Tour of Spain, Tour of Italy mountain biking, we in Canada are able to watch sweaty fat men in kilts lift boulders over their heads.

"Lucky us - all that vibrancy. As for the other channels, I have only kept a few of them on my service. Documentary Channel is a good idea but the same documentaries have been on their schedule since November and I've seen nearly every one. TVLand is fun, but it shows me how bad shows don't improve with time or nostalgia.

"We now live in a global economy and Canadians are fully aware of what is available elsewhere. Just check out the Internet; I've been reading on the New York Times TV forums for two years about series and movies on HBO and Showtime, which I will probably never see, and jealously read about OLN's coverage of the spring bike races in Belgium.

"Drivel original, at least. This is not to say all is ideal in American broadcasting. On a recent trip to the U.S., I saw plenty worthless drivel on the TV in my hotel, but at least some of it was original drivel, not stale, repeats of something that was drivel six years ago. The unspecified future is a long time to make consumers wait for a payoff, and I am not alone as a disgruntled consumer. There have been buzzes among consumers that have reached those in the industry. A recent article in Strategy, a marketing magazine, begged the hucksters, 'Don't give up on TV yet,' seeking to assure their readers that yes, digital cable is getting its act together and everyone look forward to a bright future with content options, mixed media and other nifty stuff. While this creative process unfolds, we're paying stiff monthly fees while they learn on the job. We don't want to hear about integrity and vibrancy. Integrity sounds like creaky documentaries about Canadian politics or the mating habits of the black duck or more heart warming dramas about poor Maritime families. Vibrancy recalls those dreary arts specials on CBC that no one watches. When East Germans were allowed to travel to the west, many didn't want to come back. Canadians who have tasted the freedom offered by choice won't stop going to the U.S. for hacked satellite cards. The trade will probably go underground and continue. If the broadcasters are so concerned about this trend, if they want to keep their subscribers, they try broadcasting something the public wants to see. Or at least give us some choice. If we choose to watch drivel, it's our choice and we're paying for it. It's our drivel."

And before we leave the pay-TV piracy world, this revelation that piracy has now leapt to the forefront in a much larger environment.

"Summer blockbusters boost e-piracy. As many as 9 million file swappers were online simultaneously following the release of the new Star Wars sequel and Spider-Man movie, according to Viant Corp. (VIAN: news, chart, profile), a research company. The firm estimates as many as 600,000 film (copies) are illegally downloaded daily through the Internet, an increase from an estimated 200,000 a year ago. Viant also said not every would-be digital movie viewer succeeds. While an estimated 10 million people tried to get bootleg copies of the summer films, 'as few as' 2 million were able to do so. Another research report says piracy of computer software is growing, too. Surveying 1,026 Web users, the Business Software Alliance said a third of online Americans conceded they have downloaded commercial software and not paid for every copy made. A quarter of those who download software say they never pay. The BSA president described the situation as, 'a disturbing behavioural trend that violates copyright laws and costs billions of dollars and hundreds of thousands of jobs every year'."

Coop's comment: This category of unsubstantiated and non-verifiable "news report" of course sends shivers through Hollywood. The logistics involved in "ten million people" trying to obtain "bootleg copies of summer films" is mind-boggling. *Step one* - somebody *inside the movie business* has to spirit one copy of a film such as Spider-Man out of a "secure" location. If the movie people can't police their own larder, they can hardly blame people "at home" for taking advantage of an Internet distribution system. *Step two* - one can only download movies through a very high speed Internet connection. This immediately limits such downloads to a small percentage of the total Internet universe, a number still so tiny that a claim of "ten million - simultaneous down loaders" is lost in a credibility gap. *Three* - the report totally overlooks the almost 100% predictable piracy movie trade centred in China, Thailand and lesser Asian nations. Spider-man and the Star Wars sequel both appeared, according to news reports, on push cart stalls in Bangkok, Hong Kong, Taipei (et al) from a week to ten days prior to being shown for the first time to the first-run American theatre public. If Hollywood's internal security within its own distribution network is so pitiful that first rate, original celluloid copies can be spirited from the film banks in Hollywood to Asia enough in advance of a film's release date to allow DVD and VHS pirates to actually produce copies and distribute them ahead of the official releases - well, it is difficult to work up much sympathy for Hollywood.

Copyright's anchor dragging DTT backwards? "Digital TV founders on fears of Internet piracy. Congress has mandated that television broadcasts in the United States go digital, but two of the industries involved in that transition are stuck on a little problem called the Internet. Movie studios worry that digital-TV viewers will share programs over the Internet, just as many music fans share MP3 files online. Consumer-electronics companies fear that the studios' proposed piracy countermeasures would force them to make products that nobody wants to buy. Now, this gridlock has caused a major working group to miss its deadline for recommending how to stop digital TV broadcasts from being shared over the Internet. The Broadcast Protection Discussion Group, made up of representatives from the technology and motion-picture industries, began meeting at the end of November to resolve the issue. The group is part of the Copy Protection Technical Working Group, the same industry organisation that established the standard for DVD movies' copy-prevention encryption. Robert Perry, vice president of marketing at Mitsubishi Digital Electronics America and one of three co-chairs of the discussion group, said he had not anticipated the level of disagreement he encountered among its members. 'Can we all agree on a method to keep digital content from being illegally distributed on the Internet? The premise is so simple and crystal clear, it's surprising the amount of debate it's created,' he said, citing a last-minute flurry of criticism from consumer-electronics manufacturers, consumer groups and others. 'Everybody except chicken farmers and professional wrestlers submitted comments,' said Perry, who estimated that the combined objections submitted to the group would amount to thousands of pages. The group now plans to meet and finish its report on June 3rd. Most of those who commented object to various points of a rough draft of the discussion group's report, released in May. Tech-policy groups such as the Electronic Frontier Foundation have argued that proposals in the report would prevent consumers from recording some television shows for their personal viewing or sharing recordings with friends. They have also assailed the discussion group's closed-door policy. Tom Patton, vice president of government relations at Philips Electronics, a member of the discussion group and a critic of its secretive workings, spent a full day waiting for the report and was upset to have not gotten any official word of the delay. 'Where the heck is some notice of that?' said Patton. 'I want to go home.' Other member organisations were less concerned. 'It's far more important for the report to be complete than quick,' said Rich Taylor, vice president of public affairs at the Motion Picture Association of America.

NZ Sky heads for profitability - by raising rates

From July 1, New Zealand's Sky analogue and digital subscribers will pay more money per month per household for essentially the same television they have been receiving. Subscribers were notified in a letter late in May as follows:

"**Dear MR X**

Mindful of our commitment to provide you with top quality sports coverage we have experienced increased costs over the last 12 months. Regretfully we must now pass on a portion of these costs to you in order to maintain the high standard of service you enjoy and expect from Sky. So, as of your July statement there will be an increase in the weekly charge for the Sky Sport package of $1.15 per week. The new monthly charge for the services you receive will be $51.60 (previously $46.61). In order to keep the price increase to a minimum from July 1st MGM will become part of a new multichannel Movie package to which we have added Turner Classic Movies (TCM). This new 4 channel movie package has over 200 movies every month from Blockbuster premieres on Sky Movies and Sky MovieMax to Classic's on MGM and TCM. And because you already subscribe to the sports package you can add the movies package for only $16.63 per month (a saving of $2.00 per month on the usual movie package price). Now, grab a comfortable chair, because over the coming months Sky has the very best in sport and entertainment from New Zealand and around the world coming directly to you. Rugby fans are in for a huge season with Sky bringing you exclusively live coverage of the Tri-Nations, The Bledisloe Cup and Air New Zealand NPC. Rugby League supporters can follow the Warriors right down to the wire on Sky 1, plus there's all the top Golf and exciting Tennis and Cricket action and so much more on all Sky's channels. As always at Sky we are dedicated to providing the very best in television now and in the future, and we hope you continue to enjoy all our great entertainment.

Yours Sincerely, Veni Morisa Billing Services Manager. P.S. as you pay by Direct Debit your monthly debit will automatically reflect the increase without need for you to do anything."

This letter, to a basic + sport subscriber, was of course "customised" for the particular service level bought. Other "adjustments" in pricing are more complex to unravel. Terrestrial analogue subscribers will have their monthly fee raised from $24.96 to $29.96. Non direct-debit digital subscribers go from $47.90 to $52.90 for basic + sports while the top end "complete digital package" (less Playboy, Spice and non-English channels) jumps to $73.18 per month. Sky is not explaining how these increases will aid in reaching cash-flow positive status but a quick computation with the December 31, 2001 half-year statistical statement on hand suggests Sky's gross receipts will jump over $1,000,000 from analogue subscribers and up to $1,500,000 per month from digital viewers. Total? Around NZ$30,000,000 per year more money to spend back out as subsidies for yet additional digital subscriber installations (enough to support 60,000 new digital subscriber equipment installations).

A New Zealand web site with a history of Sky-bashing (www.aardvark.com) has revealed sufficient detail to perhaps encourage more widespread hacking of Sky's analogue terrestrial service. Their report posted during May read as follows:

"**Sky TV's UHF Service Cracked**. TV tuner cards are an increasingly common component of many home PCs these days. They cost little more than a regular video card but offer the ability to tune in to the same VHF and UHF free-to-air (FTA) broadcasts that a regular television can receive. Another attractive feature of these cards is that they allow you to use your camcorder (even the old analogue one) as a digital camera -- you just play back the tape and capture whatever frames you want to use as a still image. However, there are other things you can do with that clever little card -- watch Sky's UHF pay TV channels for instance -- for free.

"Over the past few years I've seen various pieces of software on the web which claimed to decode the VideoCrypt system and I've always wondered whether they'd actually work on a Sky TV signal here in NZ. Well, according to one Kiwi (who, since this column was published has pulled the relevant webpages from his site -- for obvious reasons), they do. Yes, if you'd prefer to pay a few dollars extra for a video card with tv tuner capabilities (preferably one that also has a TV-out connector so that you can plug your large-screen TV set in rather than rely on your PC's wimpy little monitor), you can get a lifetime of access to NZ's largest pay TV service at no extra cost.

"Now don't get me wrong -- I don't condone this type of theft for one minute -- I'm simply citing this as yet another example of just how difficult it has become to protect intellectual property in the 21st century. I believe that there has been a very small black market in special VideoCrypt decoders which don't require a smart card for some time -- but the number of people who have access to such devices is extremely small and unlikely to threaten Sky's bottom line at all. A software-based solution that can be downloaded anonymously from the Net and installed on a regular PC is perhaps a whole different story though. Given the choice of handing over a fist-full of $10 notes to Sky each month or downloading a piece of software -- what do you think that many students and young people will do? Hey, now little Johnny can watch Sky sports in his bedroom on his PC while mom and dad watch the movie channel, so who (apart from Sky) is going to bitch about that? How long, I wonder, before Sky just turns off its UHF service, relying instead on its satellite-based digital broadcast? I guess the existence of this software is extra incentive to do so. Have you tried this software? Did it work for you? What do you think about the ethics of using this software to watch another channel in the bedroom if you've already paying for a Sky subscription?"

Coop's comment: Response to the web posting attracted limited reader reaction although virtually all of those posting comments did in fact verify the system worked to their satisfaction. A much greater potential threat to Sky's digital service has now also surfaced as well (see SatFACTS for June 15).

"**Australia rethinking "wisdom" of current DTT rules**. High definition television is supposed to mean better TV and only now the minister is getting the picture. Already there are rumblings coming out of Canberra that the grand plans devised by Communications Minister Richard Alston to give all Australians even more free television are being re-thought. Amazing really, given this horse is barely out of the stalls, having been launched via press leak and officially discussed by Alston at a broadcasting conference. Even nestled among some pretty hairy communications policies, this one stands out for its near complete lack of supporters. And since conventional wisdom says that the prime object of the person in charge of the communications portfolio is to keep as many media moguls as possible happy, this Alston initiative is all the more confusing. Sure, giving the voters something always works. But they haven't been asking for more free-to-air television because they are accustomed to five channels and don't have that much additional craving. While stated objectives in political-speak often align poorly with the real agenda, it seems most plausible that this is about Alston attempting to encourage the take-up of digital television. Offering multiple channels from each network will, possibly, entice consumers to buy a set-top box. In his Cabinet submission Alston says the measures will reduce the criticism that the Government is limiting the potential of digital television.

"He is right about the criticism. The spectrum he so generously gave to the free-to-air networks has so far been a white elephant. It broadcasts a digital signal that next to no one has the equipment to receive or the incentive to buy. He moved away from issuing datacasting licences to those outside the existing commercial broadcasters, which will upset Telstra, the Murdochs and Fairfax. And although until now datacasting has been off the agenda, Alston is aware that Ten and Nine don't want multi-channelling because they believe it makes no commercial sense. Seven's Kerry Stokes was pushing hard to have it for a whole host of reasons and it's hard to go past the possibility that Seven is attempting to torpedo Foxtel - or at least enhance the Seven negotiating position when it comes to getting a berth on the cable network. Stokes is great at playing these games of leverage. He uses the legal system to fabulous effect and he is desperate for Alston to maintain his newly stated position on multi-channelling because it increases his arsenal. Whether Stokes ever moves to screen additional channels is another thing. Nine clearly has no interest in running more channels because, in the first instance, it would blow up its pay-TV investment. Ten thinks the economics of multi-channelling don't exist. There isn't really a successful business model for multi-channelling anywhere around the world. The closest is ITV in the UK, which has been a flop and has now closed down. The issue is that all the variable costs go up - the largest of which is programming - but revenue might not go up as much. The boys at Ten reckon that there won't be any net gain in advertising and the whole exercise is just a margin squeeze.

"For Seven's stance to make sense it has to think that more channels can boost the share of the advertising dollar received by television. Because the fixed costs don't increase so much, Seven thinks the thing is do-able. But expanding the television advertising market won't be easy. Seven is looking to create genre or demographic targeted channels rather than just the usual pay streams of films, sports, news, kids, comedy and general entertainment. The theory that this can provide better target market for the advertisers holds some intellectual appeal but it's still hard to see how the revenue gains could stack up against the new cost base. Seven also looks on multi-channelling as a much-needed defensive play against the onslaught of pay TV. It's probably fair to say that Alston was listening harder to Stokes than to Nick Falloon at Ten or James Packer at Nine when he penned his submission. He clearly wasn't thinking about Ziggy Switkowski and Bob Mansfield at Telstra, nor how this could seriously damage the chances of Foxtel ever making a profit. At least the move is recognition that Alston has worked out what everyone else in the industry knew years ago: that the networks needing all that spectrum for high definition television was just a fabulous network con. And even if Alston did stick to his multi-channelling stance it won't mean much if two of the three commercial networks don't use them. It's just not enough to call this 'I gave it to you, take it or leave it' deal a policy with public benefit. Maybe the Government might have to think of some new uses for all that spectrum."

("Communications Minister Richard Alston has said that the Government was seriously considering allowing multi-channelling on free-to-air television, a move that will be strongly resisted by pay-TV companies. Multi-channelling is banned until after 2005 under laws introduced to pave the way for subscription television in Australia.")

Aren't you glad you live-where-you-do - department:

"Two companies have announced plans to launch personal GPS 'location devices' this year, which will act as a kind of LoJack for everyone from meandering children to nervous executives in kidnap-prone countries. One is a bracelet, which parents can lock on their kids' wrists to track their location and movements over the Internet, that is made by Wherify. Another -- and the most sci-fi application by far -- an implantable GPS device that Applied Digital Solutions of Florida plans to develop within the next eight months. GPS is already used to track one segment of the (USA) population: parolees. In municipalities across the country, police use GPS to remotely monitor parolee's footsteps. The parolee systems can be programmed to alert authorities if the offender strays into a designated off-limits area, such as school or a victim's home. Applied Digital Solutions, the company that developed the implantable VeriChip ID, would only provide scant details about the implantable GPS device. Chief technology officer Keith Bolton said the company was inundated with requests from Latin America and Asia for an application that uses the Global Positioning System to keep tabs on potential kidnapping targets. Between 1992 and 1999, kidnappings for ransom have jumped 70 percent world-wide, according to insurer Hiscox of the U.K., and Latin America accounted for roughly 75 percent of all abductions. 'They've pleaded with us to please make a device like this,' said Bolton, who predicted that the product would become the company's biggest seller. ADS already distributes another GPS device in Latin America called 'Digital Angel', which includes a watch and a pager-like device that clips onto a waist band; the company plans to combine the separate units into a single bracelet by the end of the year. But watches and other external devices can be easily removed by kidnappers, said Bolton and in 'such cases, an imbedded device would prove very useful'.

Bolton said the dimensions of the implantable GPS 'personal location device' would be about two inches in diameter and a half-inch thick -- smaller than a pacemaker used by heart patients. It would combine GPS and wireless technologies to pinpoint the exact location of the wearer. Like a pacemaker, the device would be implanted in the upper clavicle area, he said. It would be powered by a lithium ion battery that can be recharged through the skin and use a proprietary antenna capable transmitting signals through flesh and muscle. Bolton refused to be more specific about the technical aspects of the product.

Another company also recently announced plans to launch a GPS people locator, this one meant for children. Wherify, of Redwood Shores, California, has developed a bracelet that combines GPS and wireless technologies to allow parents to plot their kid's location and movement on a map over the Internet. The device, which costs $400 plus a monthly $25 service fee, can be locked onto the child's wrist. The company plans to launch the product by summer's end and is developing similar GPS devices for adults, said Wherify president Timothy Neher. 'This technology is going to change the way people feel about stealing kids and raping women on bike paths,' he said. 'It's really going to help people feel safer'. As GPS units shrink in size, more innovative applications of the technology will develop, said Marc Prioleau, the director of marketing for SiRF whose GPS chipset is integrated into the Wherify personal locator. The SiRF's chipset is based on 'aided-GPS', which uses wireless technology to send GPS information to a receiver in areas where satellite signals are weak, such as a windowless basements. Not too long ago, GPS receiver modules were large enough to fill up the bed of a pickup truck, Prioleau said. Today, SyChip manufactures a thumbnail-sized GPS receiver module. But in the rush to create smaller, faster and fancier gadgets, some manufacturers have lost sight of practicalities, said Privacy Forum moderator Lauren Weinstein. He pointed to implantable GPS as one of those items. 'There will be a short window where the bad guys aren't aware of the technology, but then it will be for them to dig around in their victims to see if they're wearing GPS receivers,' said Weinstein. The overriding issue is do you create a bigger danger to the person than existed in the first place'?"

News tid-bits - Updating previous reports:

India: **Cable TV operators**, frustrated because India's pay and FTA broadcasters could not seal a deal to carry World Cup Soccer, have gone the piracy route - using hacked smart cards and satellite dishes to access World Cup feeds from a number of African and Asian sources. The cable operators, more than 50,000 at last official count, say their subscribers will not be deprived of the 64 matches now underway.

Europe: **Poland and Spain now have** new Canal-Plus issued version "2" smart cards. Canal - Plus Seca format cards had been widely hacked by pirates. Unfortunately, the new "2" version has also been hacked and what this really says is the piracy customers will simply have to spend money to upgrade to a replacement card.

UK: **British Sky Broadcasting expects to gain** up to 300,000 ITV Digital customers following the collapse of its pay-TV rival. The UK satellite operator, reporting strong third-quarter subscriber growth, said there had been a "lift" its business since ITV Digital was put into administration. Net subscriber growth in the three months to March 31 was 171,000, bringing its customer base to 5.9m and putting the company controlled by Rupert Murdoch's News Corporation well in front in the pay-TV market.

Australia: **Austar got through $43.5 million** in the first quarter of 2002 and had a cash balance of $59.6 million at March 31. This compares with the $24.4 million spent in the three months to December 31, 2001.

Australia: **Optus is threatening to shut down** its pay-TV and local telephony business if regulators block its planned content-sharing deal with Foxtel. The threat is the latest step in negotiations with the Australian Competition and Consumer Commission. Concern is growing at Optus and Foxtel the deal will be blocked or conditions for approval will prove too onerous.

Opus' pay-TV and local telephony business is losing about $350 million a year.

Australia: **Iridium's new owners** is a consortium of investors led by Melbourne-based Quadrant Australia Ltd. and Inepar SA of Brazil plus a group of private American and British investors. The new company bought all the old Iridium's assets, including 66 satellites in a low earth orbit constellation, for a mere US$25 million on condition that a contract with the United States military is included in the buy out. The low acquisition cost has enabled Iridium Satellite to dramatically cut call costs. (Coop's comment: Iridium had an original investment in excess of US$6b!)

USA: **The Pentagon wants to turn up the power** on its network of satellites used to guide U.S. troops and the bombs they fire. The $200 million proposal is one of the military's first to fulfil Defense Secretary Donald H. Rumsfeld's plans to protect the United States from a "space Pearl Harbor." The money would pay to upgrade the newest Global Positioning System satellites, which have yet to be launched. That would allow the transmission to military receivers of signals that are eight times more powerful those sent by the current generation of satellites. These boosted signals would be powerful enough to burn through electronic jamming put up by an adversary. American troops would not get lost and satellite-guided smart bombs would still find their targets. The ever-more-popular GPS devices used by civilians would not be affected or receive the boosted signal, defense officials said. By 2006, enough new satellites would be in orbit so that troops with GPS receivers should be able to receive a boosted signal anywhere on the Earth's surface, according to the plan."

Australia: A visiting British TV expert has harpooned Australia's politically motivated decision to force an upgrade from analogue TV to HDTV. A report notes, "Australia's digital television regime, under review by the Howard Government has been ridiculed by a visiting British broadcasting expert. British Radio Authority chairman Richard Hooper told the Australian Broadcasting Authority in Canberra that high-definition television as prescribed by the Government was obsolete around the world. 'I go to a lot of conferences,' Mr Hooper said. 'I've not heard the word mentioned for four years.' Mr Hooper, who has also worked for BBC Television, European satellite television and British Telecom during a 40-year career, said he was 'surprised' Australia persisted with a technology rejected by Japan, Britain and the US. Under the existing digital legislation, Australia's commercial television networks are required to deliver 20 hours of HDTV content a week. However, there is virtually no consumer demand for HDTV, which is expensive and spectrum-hungry."

Australia: **ABC asks for reprieve** on HDTV transmission requirements. "ABC calls for digital delay. The ABC has asked the Federal Government to drop its requirement that TV stations broadcast 20 hours a week of high-definition digital TV by January. Less than 20,000 Australian homes have digital television equipment, and the ABC has claimed satisfying the requirement will sap its other services."

Australia: **Optus is making it very clear** that unless the ACCC approves a plan to allow Foxtel to become the dominant supplier of movie and sporting cable TV channels it will not only close down its cable TV business but also exit domestic and business wire line telephony. "It turns out that SingTel has 'fessed up to the reality that the cable was no longer worth the billions Optus has invested. Last September SingTel paid $13 billion for Optus. Now, it put most of that down to goodwill, which will be written off in the SingTel books over 20 years. And it also slashed the official value of Optus' most concrete asset - the hybrid fibre coaxial cable network - from $1.6 billion to about $640 million. And it is signalling it is prepared to leave most of it completely unused if it can't get approval of the Foxtel Optus deal through the ACCC."

USA: **The first high-definition movie** for the home market was to hit (USA) stores around May 28 when Artisan Home Entertainment releases Terminator 2: Judgment Day on Digital-VHS (D-VHS), Artisan officials said. Titles expected to join T2 on that date or soon thereafter are U-571 from Universal Studios Home Video, X-Men and Independence Day from 20th Haunting from DreamWorks Home Entertainment. Terminator 2 will carry a list price of $34.98.

Fiji Islands: "**Questions have been raised** about Australian domination of Pacific Islands broadcasting, with claims the Australians have launched a major drive to influence Pacific Islanders. The questions come from one of the region's most experienced editors, Laisa Taga, of Fiji, who writes in her latest column in the regional news magazine Pacific: 'Turn on your radio in many Pacific Islands these days, and you'll get news and views with an Australian accent and slant. Turn on your television and it could be the same. Suddenly, Australians are everywhere. The Aussies seem to have launched a massive drive to influence Pacific Islands people by providing news and views the Australian way through Radio Australia and Australian Television.' Taga said Radio Australia has been busy offering free satellite dishes to Pacific Islands radio stations in an effort to get them to rebroadcast its programs. She said: 'It seems to be working. A check on Radio Australia's website shows it now proudly gives a long list of Pacific Islands stations rebroadcasting its news and views. Australia Television is also welcoming Pacific Islands television stations rebroadcasting its programs.' She said in the latest development Radio Australia head Jean-Gabriel Manguy has been seeking Pacific Islands Forum Secretariat funding to produce programs for the Forum Secretariat. Taga said: 'This is obviously good for Australia. But is it good for Pacific Islands countries to have Australia having such an influence on what people hear and see?' Even UNICEF -- the United Nations Children's Fund -- is sending an Australian to do reports for the Pacific Islands on the special United Nations session on children, she said. 'Doesn't UNICEF think any of our Pacific Islands journalists are capable of doing this?' Taga asked. Taga is the editor-in-chief of the Islands Business International multimedia group. This Suva-based group is the South Pacific's biggest magazine publisher, with 10 titles. She is a former editor of Fiji's Daily Post newspaper and was the first news director when television news was established in Fiji. (Coop's comment: Free to air Fiji One TV carries ABC Asia-Pacific several hours per day. New Zealand has all but abandoned radio and television services to the Pacific Islands although TVNZ does supply linking service through satellite for sport and limited other special event coverage.)

USA: **Now it is official**. "According to a story in Television Digest newsletter, the Television Bureau of Advertising estimates that combined broadcast TV revenues for 2001 were down 13.2% from 2000. That is the first time that's happened in decades. The top-4 commercial networks were down 10%, national spots were down 24.8%, local spots were down 9.5% in the most recent complete calendar year.

New Zealand: **The Knowledge Breakfast**. The University of Auckland, including UniSat, is to participate in a new TVNZ education pilot, "The Knowledge Breakfast". The Knowledge Breakfast is designed to demonstrate the potential of existing television broadcast, Internet, satellite and personal computer technology - as well as the availability of existing and appropriate content to support the introduction of digital education television, web and IP (Internet Protocol) Multicast communication services. UniSat has been selected as one of eleven sites nationally to host an IP Multicast satellite receive system. Satellite Internet Protocol Multicast enables high speed broad band downloading of digital content to computers or networks connected to a satellite dish. The data files are effectively "broadcast" to the receive sites as scheduled transmissions. IP Multicast enables files such as computer software, CD ROMs, documents, graphics, live events and streaming video to be transmitted to locations that do not have high speed connectivity or whose connections to the Internet are congested. These programmes can be watched "live" or are stored on the computer's hard disk for access and use at a later time. During the pilot, each site will record directly onto computer hard drive, much of the content of the associated Knowledge Breakfast television broadcast and "nzoom" web site support material. The downloading of other educational resources, web-sites, videos and software will also be tested. The intention is to demonstrate that this technology can readily distribute digital material to a school computer or network.

Hong Kong: Asia Satellite Telecommunications Company Ltd (AsiaSat) has not secured a single contract for its latest satellite, AsiaSat 4, due to the economic downturn and a delay in its launch. Media reports said AsiaSat blamed sluggish market conditions for the failure to secure clients so far. AsiaSat 4 had been scheduled to be launched to 122E this (past) May, a replacement launch date has not been set but it is unlikely to be launched before the end of this calendar year.

ONLY two more issues of CTD will be published - see front cover detail.